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[54] **COMPLIANT OVERRUNNING CLUTCH WITH CENTRIFUGAL THROW-OUT**

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[58] **Field of Search** ..... 192/46, 45.1; 74/575, 74/576, 578, 577 R, 577 M

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[57] **ABSTRACT**

A compliant overrunning ratchet and pawl clutch mechanism with centrifugal throwout comprising a ratchet wheel and a one-piece pawl wheel. The ratchet wheel has plurality of angled teeth disposed about its perimeter. The pawl wheel comprises a one-piece circular hub concentrically surrounding the ratchet wheel, and has a plurality of elongate compliant biasing members extending from its inside surface toward the ratchet wheel. The biasing members each terminate in a pawl configured for engaging the teeth of the ratchet wheel when the pawl wheel rotates in a first engaging direction, and for sliding over the teeth of the ratchet wheel when the pawl wheel rotates in a second overrun direction. The biasing members and clutch pawls are integrally formed as a single piece from the material of the pawl hub, and the pawls may comprise either compression or tension members. The biasing members may advantageously allow the pawls to "throw-out" or compliantly rotate away from the teeth of the ratchet due to centrifugal force when the pawl wheel rotates in the overrun direction. In one illustrative embodiment the clutch mechanism is formed as a micromechanical device by photolithography.

22 Claims, 4 Drawing Sheets